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ABSTRACT

In today's schools, the additional time demanded by administrators and parents for literacy instruction of school beginners has almost eliminated content area instruction in science and social studies and has reduced instruction in math. This paper shows how to present such instruction in content areas to emergent readers without sacrificing literature through a selection of books recommended in "Best Books for Children." Each book title in the paper relates to content standards recently and professionally established for the lower grades by national organizations and/or a state department of education. Each of the 13 titles may be read aloud to the class and followed by the developmentally appropriate activity described in the paper. Also included are synopses of the books as well as the individual concepts in science, social studies, or math found in those books. (NKA)

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Picture Books that Teach Concepts in Science, Math, and Social Studies to Beginning Readers.

by Mildred R. Donoghue

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PICTURE BOOKS THAT TEACH CONCEPTS IN SCIENCE, MATH, AND SOCIAL STUDIES TO BEGINNING READERS

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Low reading scores among young children in public schools, as reported in the last decade, have caused both an increased emphasis on skills development and a restricted coverage of literature. The additional time demanded by administrators and parents for literacy instruction of school beginners has almost eliminated content area instruction in science and social studies and has reduced such instruction in math.

This paper will show how to present such instruction in content areas to emergent readers without sacrificing literature through a selection of books recommended in Best Books for Children (R. R. Bowker). Each book title relates to content standards recently and professionally established for the lower grades by national organizations and/or a state department of education. Each of the 13 titles may be read aloud to the class and followed by the developmentally appropriate activity described in the paper. Synopses of the books as well as the individual concepts in science, social studies, or math found in those books are also included.

SCIENCE EDUCATION CONTENT STANDARDS (K-4)
(National Academy of Sciences, 1996)

EARTH AND SPACE SCIENCE

Sun Up, Sun Down by G. Gibbons (Harcourt, 1983), unpaged.
A nonfiction book, it concerns one day in the life of a little girl who wakes up when the sun lights up her room. Later she goes to sleep when it gets dark because the sun is now shining on the other side of our planet.
Concept: The sun provides many benefits and regulates life on Earth.
Follow-Up Activity: Explain to the students on a sunny day that the position of the sun in the sky determines the length of shadows. Have them work in pairs to measure their shadows in the morning and again in the afternoon. Make a bar graph with the class comparing the two measurements of all the students.

LIFE SCIENCE

The Lorax by Dr. Seuss (Random House, 1971), 64 pp.
A little brown creature called the Lorax tries to ward off pollution and save the Truffula Trees but Once-ler wants them for his business and will not listen to the Lorax.
Concept: Everyone must work together to save the environment.
Follow-Up Activity: Have children each draw their own version of Lorax and one Truffula Tree. Encourage them also to write reasons why every tree is important to the environment.

PHYSICAL SCIENCE

The Great Valentine's Day Balloon Race by A. Adams (Macmillan, 1980), 32 pp.
Orson Abbot, a rabbit, builds a hot air balloon to enter into the big race. His smart rabbit friend, Bonnie, offers to help fly the balloon, and Orson's parents also become involved. During the race Orson and Bonnie learn about wind directions and the principles of hot air ballooning.
Concept: Warm air rises.
Follow-Up Activity: Prepare hot chocolate and pour each child a cup. Have the children place their hands a few inches above the paper cups to feel the warmth of the air that is rising. Show that the hot liquid warms the air.

HEALTH SCIENCE

The Edible Pyramid: Good Eating Every Day by L. Leedy (Holiday, 1994), 30 pp.
The Edible Pyramid is a restaurant that serves a variety of nutritious and delicious meals. On the day the restaurant opens, the cat waiter introduces his animal customers to the food groups shown in the nutritional pyramid developed by the U. S. Department of Agriculture.

Concept: We must eat foods daily from each of the major food groups in order to stay healthy.

Follow-Up Activity: Ask pairs of students to each design a collage of nutritious foods by cutting pictures out of discarded magazines and gluing them onto poster board. Then have them label each item according to the food group to which it belongs. Check to be sure that all groups are represented. Have each pair share its collage with the class before it is displayed on the bulletin board.

MATHEMATICS CONTENT STANDARDS (PRE-K-2)
(National Council of Teachers of Mathematics, 2000)

(CONTENT STANDARD #1: NUMBER AND OPERATIONS.)

Give Me Half! By S. Murphy (HarperCollins, 1996), 40 pp.
A boy and his sister learn how to share when he has only one pizza and she has only one can of juice. When she tries to hide her package of two cupcakes, her brother gets upset so the package is split in half. When both finish their cupcakes, each child cleans up half of the kitchen!

Concept: Some items can be divided equally into halves.

Follow-Up Activity: Have the children draw pizzas on large paper plates. Instruct them to fold the "pizzas" in half and cut them so they can share even amounts with a friend in another classroom. Then ask the students, "What would you do if you needed to feed four people?" Encourage them to write the same name of the variety of pizza on both pieces of the paper plate (e.g., pepperoni).

(CONTENT STANDARD #2: ALGEBRA.)

The Button Box by M. Reid (Dutton, 1990), 24 pp.

A young boy explores his grandmother's box of buttons, grouping or classifying them according to various qualities. He imagines interesting stories behind the different buttons.

Concept: Items can be classified according to shape, color, or size.

Follow-Up Activity: Have the children work in groups of three and give each group 30 buttons. Ask them to sort the buttons by color and create pictures according to the color of the buttons they have (e.g., yellow buttons can form the sun; multicolored buttons can make a rainbow). Some groups may wish to share their designs with the class.

(CONTENT STANDARD #3: GEOMETRY.)

The Village of Round and Square Houses by V. Grifalconi (Little, Brown, 1986), 32 pp.

In a certain Cameroon village on the west coast of Africa, the men live in square houses and the women and children live in round houses. How the custom started is explained in this folktale, which describes a place located at the base of a volcano.

Concept: Circles and squares are two basic and different geometric shapes.

Follow-Up Activity: Give each of the students a large square piece of paper and a large round piece of paper. Have them cut out pictures from discarded magazines of square items that belong on the first piece and round items that belong on the second piece. Ask them to paste the pictures on the proper papers and label each one. Discuss and display.

(CONTENT STANDARD #4: MEASUREMENT.)
How Big Is a Foot? By R. Myller (Dell, 1990), unpaged.

A king decides to surprise his wife on her birthday with a bed made especially for her (in the days when there were no beds). However, the apprentice carpenter makes a bed that is too small for the queen, and is jailed until he solves the problem.

Concept: There are both standard and nonstandard ways of measuring.

Follow-Up Activity: Give children each a ruler and have them measure their thumbs and feet to see how nearly their body parts come to an inch, a foot, and so on. Ask the class why many of our measurements today were based on body parts originally.

(CONTENT STANDARD #5: DATA ANALYSIS AND PROBABILITY.)
Moira's Birthday by R. Munsch (Annick Press, 1987), unpaged.

Moira invites all the 200 children in her school to her birthday party, although her parents were expecting only six children. Only ten (not 200) pizzas and only ten (not 200) birthday cakes arrive in time. The rest of the food arrives after the guests leave so Moira decides to have another party the next day for the 200 guests with plenty of pizzas and cakes.

Concept: Collecting and organizing data help people make good decisions.

Follow-Up Activity: Help the children in groups of four prepare a Birthday (Bar) Graph by the month for the classroom, using graph paper, pencils, and markers. The left or vertical side of the graph should be titled Number of Students; the bottom (or horizontal) side, Months of the Year. Each month's tally should be a different color. Discuss.

HISTORY-SOCIAL SCIENCE CONTENT STANDARDS (K-3)
California Department of Education, 1998)

KINDERGARTEN: LEARNING AND WORKING NOW AND LONG AGO.

Lilly's Purple Plastic Purse by K. Henkes (Greenwillow, 1996), 32 pp.

Lilly the mouse loves everything about school and especially her teacher, Mr. Slinger. One day, however, when he asks her to wait a while before she shares her new purse, she does something which makes her very sorry later.

Concept: Children and adults must be respectful of each other.

Follow-Up Activity: Develop with the class a definition of the word respect. Then discuss with the class the ways in which Lilly was disrespectful and impolite to her teacher, and ask the students, "How do people show respect at school?" On 4" x 6" white construction paper, have students each draw one way that they are respectful at school. Invite them each to dictate (or write) a sentence about their picture.

GRADE ONE: A CHILD'S PLACE IN TIME AND SPACE.

Miss Rumphius by B. Cooney (Puffin, 1982), 32 pp.

Miss Rumphius is told by her grandfather that she is to leave something beautiful to the world through her life. She travels the world, comes home to live by the sea, and leaves her mark of beauty for future generations by planting lupine seeds.

Concept: Through their own efforts, people should make the world more beautiful in some way.

Follow-Up Activity: Give students each some wildflower seeds; a clean, empty container (from eggs or milk); some soil; and information about planting and watering the seeds. Have them observe the growth of the seeds twice a week and record changes in their journals.

GRADE TWO: PEOPLE WHO MAKE A DIFFERENCE.

A Picture Book of Rosa Parks by D. Adler (Holiday, 1993), 30 pp.

This is the life story of the modest seamstress whose brave stand in 1965 began the Montgomery, Alabama bus strike that helped the civil rights movement in the United States.

Concept: Rosa Parks is a brave African American who has played a critical role in promoting civil rights for everyone in the United States.

Follow-Up Activity: Share some of the U. S. stamps that honor such Americans as inventors, authors, and past Presidents. Then ask the class to design a postage stamp to honor Rosa Parks.

GRADE THREE: CONTINUITY AND CHANGE.

The House on Maple Street by B. Pryor (Morrow, 1987), 32 pp.

When their family moves to Maple Street, Jenny and Chris find a small china cup and begin a historical exploration of their home and neighborhood. They learn that many people have passed by the house or lived there during the last 300 years.

Concept: Neighborhoods change over the years.

Follow-Up Activity: Draw the Old House and make copies for each child. Then have the students each draw on a separate sheet of paper how they think the house will look as the years go by. They may add windows, extra stories, sidewalks, shrubbery, and so forth. Finally, attach the two drawings together for each child and have the class discuss changes in the homes.